

The risk of radiation exposure is affected by coronary lesion severity in PCI for single coronary lesion

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Purpose: The coronary angiography (CA) and percutaneous coronary interventions (PCI) are complex procedures requiring comparably long fluoroscopy times. The aim of the investigation was to assess factors of radiation exposure dose in coronary intervention for single coronary artery lesion.

Methods: The study was performed prospectively in 97 consecutive patients with PCI for single coronary lesion between November 2011 and January 2012. The patient dose was registered using a dose-area product (DAP) meter. Operator, radiologic technician and nurse dose were recorded using a personal dosimeter. We analyzed radiation exposure dose according to groups by lesion characteristics, lesion locations and vascular access site. Also, efficacy of various shielding devices (lead suit, lead goggle, lead thyroid protector) are estimated by measurement of radiation dose at inside and outside of them coincidentally.

Result: Risk of radiation dose is significantly higher in complex lesion PCI than simple lesion (exposure time : 9.2 vs 23.9min, $p < 0.001$, DAP: 104.6 vs 223.9Gycm², $p < 0.001$, operator dose: 62.9 vs 86.7mSV, $p = 0.049$, radiologic technician dose: 4.1 vs 7.4mSV, $p = 0.001$, nurse dose: 11.3 vs 18.4mSV, $p = 0.089$). There is no significant difference in radiation exposure between lesion location divided into LAD, LCX and RCA. Protection efficacies of radiation of lead suit, lead thyroid protector, lead goggles ((outside dose - inside dose) / outside dose), expressed by %) are 95.6%, 84.9% and 55.8% respectively.

Conclusion: The risk of radiation exposure is affected by coronary lesion severity rather than coronary lesion location in coronary intervention for single coronary artery lesion.